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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,283	04/13/2004	Tremitchell L. Wright	US20030480	4550
173 7590 03/06/2008 WHIRLPOOL PATENTS COMPANY - MD 0750 500 RENAISSANCE DRIVE - SUITE 102 ST. JOSEPH, MI 49085				
EXAMINER WILKINS III, HARRY D				
ART UNIT		PAPER NUMBER		
1795				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/823,283

Applicant(s)

WRIGHT ET AL.

Examiner

Harry D. Wilkins, III

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1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4, 8, 13, 14, 16-23, 26 and 33-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4, 8, 13, 14, 16-23, 26 and 33-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16 November 2007 has been entered.

Status

2. In view of new independent claims 34, 35 and 41 and the new combinations of features presented in these claims, the previous grounds of rejection have been withdrawn in preference of new art that more closely matches the claimed features.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Electrolytic Chemical Generator for Automatic Cleaning Device.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 14 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. Applicant has failed to utilize proper language for alternatives within a claim. See MPEP 2173.05(h). Applicant should amend claim 14 to comply with the proper format for alternative language, such as by citing "comprises a power source selected from the group consisting of a rectified alternating current and an inverted alternating current" or "comprises a power source of one of a rectified alternating current or an inverted alternating current". A similar format would also be acceptable for claim 23.

6. Claims 39 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 39 and 48 recites the limitation "said laundry appliance" in line 2. There is insufficient antecedent basis for this limitation in the claim. Examination will be based upon the claim stating "said cleaning appliance" in conformance with how claim 26 was amended by Applicant.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 35-37, 14, 39-46, and 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallum (US 4,085,028) in view of Price et al (US 2003/0213503).

McCallum teaches (see abstract, figures and detailed description, particularly example IV) an electrolytic cell device for producing a household bleach solution containing sodium chlorite. The device included an electrolytic cell including a first metallic plate (30), a last metallic plate (31) and a plurality of bipolar intermediate metallic plates (33), each being arranged essentially parallel to each other as claimed, a connection from the first plate to the positive electrode of a source of direct current and a connection from the last plate to the negative electrode of a source of direct current, a conduit (53) connecting to a source of water to deliver water to the electrolytic cell, an inlet (56) to allow introduction of a fluid containing a chemical (NaCl) to be decomposed by the cell and an outlet to allow dispensing of product from the cell and a storage space (52) provided downstream of the conduit and upstream of the outlet to hold a supply of salt (rock salt filled concentrator).

Thus, McCallum fails to teach that the system included an automatic cleaning appliance and a sensing/control system as claimed.

However, McCallum does teach that manual control of the electrolytic cell was known by taking a manual measurement of the sodium hypochlorite concentration downstream of the electrolytic cell and adjusting the settings of the cell as necessary. In general, it has been held that automation of a previous manual activity is obvious to

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one of ordinary skill in the art absent a showing of unexpected results. See *In re Venner* (120 USPQ 192), *In re Rundell* (9 USPQ 220). Thus, one of ordinary skill in the art would have been motivated to have added an automatic controller for monitoring the concentration of hypochlorite and adjusting the settings of the electrolytic cell accordingly to maintain the concentration within a desired range.

McCallum teaches production of a sodium hypochlorite bleach solution.

Price et al shows an automatic cleaning appliance, such as a dishwasher, which included an electrolytic cell for producing a hypochlorite solution for enhancing the cleaning action of the dishwasher. Such conventional dishwashers included a cleaning cavity into which cleaning chemicals were dispensed.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the electrolytic cell of McCallum in combination with the automatic cleaning appliance of Price et al because the electrolytic cell device of McCallum was capable of achieving steady, high concentrations of sodium hypochlorite at high efficiencies.

Regarding claim 41, McCallum teaches, as above, the electrolytic cell as claimed. The device electrolyzed an aqueous salt solution resulting in formation of chlorine (which immediately dissolves in the water to form hypochlorite). Additionally, conventional dishwashing appliances, such as those shown by Price et al, typically included automatic locking mechanisms for the user operable door to prevent a user from opening the door during hazardous times for safety purposes. Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the automatic sensor and controller for detecting the hypochlorite concentration within the cavity of the

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dishwasher to additionally control the automatic locking mechanism to prevent the user from opening the dishwasher door when the hypochlorite concentration was at levels unsafe for human contact.

Regarding claim 44, the pressurized 40-gallon brine storage tank described by McCallum would have included a filter for preventing the rock salt pellets from flowing downstream.

Regarding claim 37, conventional dishwashing appliances, such as those shown by Price et al, typically included automatic locking mechanisms for the user operable door to prevent a user from opening the door during hazardous times for safety purposes. Therefore, it would have been obvious to one of ordinary skill in the art to have utilized the automatic sensor and controller for detecting the hypochlorite concentration within the cavity of the dishwasher to additionally control the automatic locking mechanism to prevent the user from opening the dishwasher door when the hypochlorite concentration was at levels unsafe for human contact.

Regarding claims 39 and 48, the sodium hypochlorite adjusted the pH of the water.

Regarding claims 40 and 49, the concentration of sodium hypochlorite in the wash liquor would have been indicative of both the PH and oxidation reduction potential of the wash liquor.

Regarding claim 14, the device of McCallum included a rectified alternating current source as the source of direct current.

10. Claims 38 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallum (US 4,085,028) in view of Price et al (US 2003/0213503) as applied above to claims 35 and 41 and further in view of Bentley (US 6,716,325).

McCallum fails to disclose a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition.

Bentley is relevant because it is directed to an electrolytic cell for generation of hypochlorite. Bentley teaches including a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition (col. 1 lines 41-47). Bentley further notes hypochlorite generators have the tendency to form calcareous and magnesium deposits on the cathode and can become inefficient as a result (col. 1 lines 41-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a back-washing mechanism of Bentley in the hypochlorite generator taught by McCallum in order to alleviate the issue of deposits forming on the cathode and thus increasing overall efficiency.

11. Claims 34, 2, 4, 8, 13, 16-20, 26 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallum (US 4,085,028) in view of Price et al (US 2003/0213503) and Wiegand (US 2,917,685).

The teachings of McCallum and Price et al are described above. McCallum teaches (see at least figure 1) that the source of direct current included a rectified alternating current provided by electrical components.

McCallum and Price et al fail to teach using a conduit from the water supply rto the electrical components to cool the electrical components.

Wiegand is relevant because it solves the problem of cooling electrical components. Wiegand teaches cooling electrical components with water (col. 2 lines 26-29) and specifically rectifier systems (col. 2 lines 48-51). Wiegand also notes that it is well known that rectifiers are needed to be kept as cool as possible to prevent their destruction (col. 3 lines 31-34).

It would have been obvious of one of ordinary skill in the art at the time the invention was made to utilize a device similar to Wiegand's in McCallum because it solves the problem associated with overheating of electrical components. Since this device was being utilized in a dishwasher it would have been obvious to obtain the water from the nearest available source and thus using water from the dishwasher itself.

Regarding claim 8, this claim relates to the manner of operation of the claimed structure. The device of McCallum in view of Price et al and Wiegand would have been capable of operating in the claimed fashion. See MPEP 2114 and 2115.

Regarding claims 17 and 18, the pressurized 40-gallon brine storage tank described by McCallum would have included a filter for preventing the rock salt pellets from flowing downstream. The brine storage tank is referred to as a conventional water softener tank.

Regarding claim 19, it would have been obvious to one of ordinary skill in the art to have monitored the voltage applied to the electrodes to ensure that the device was operating within expected parameters.

Regarding claim 20, the device of McCallum included a control for adjusting the current applied to the cell.

Regarding claim 26, the sodium hypochlorite adjusted the pH of the water.

Regarding claim 33, the concentration of sodium hypochlorite in the wash liquor would have been indicative of both the PH and oxidation reduction potential of the wash liquor.

12. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallum (US 4,085,028) in view of Price et al (US 2003/0213503) and Wiegand (US 2,917,685) as applied above to claim 34 and further in view of Bentley (US 6,716,325).

McCallum fails to disclose a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition.

Bentley is relevant because it is directed to an electrolytic cell for generation of hypochlorite. Bentley teaches including a back-washing mechanism arranged to remove materials deposited onto said plates during said period of decomposition (col. 1 lines 41-47). Bentley further notes hypochlorite generators have the tendency to form calcareous and magnesium deposits on the cathode and can become inefficient as a result (col. 1 lines 41-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a back-washing mechanism of Bentley in the hypochlorite generator taught by McCallum in order to alleviate the issue of deposits forming on the cathode and thus increasing overall efficiency.

Additionally, regarding claim 21, scaling of the electrodes would have caused a flow restriction through the cell as the scale built up on the electrodes. Therefore, it would have been obvious to one of ordinary skill in the art to have monitored the pressure drop across the cell (as the flow became restricted through the cell, the pressure drop would have increased) in order to determine when the back-washing mechanism would have had to have been engaged.

Regarding claim 23, the mechanism of Bentley was mechanical.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCallum (US 4,085,028) in view of Price et al (US 2003/0213503) and Wiegand (US 2,917,685) as applied above to claim 34 and further in view of Ofenloch (US 4,599,158).

McCallum, Price et al and Wiegand teach the features set forth in claim 34 as noted above. McCallum fails to disclose that the plurality of plates are arranged in an arc.

Ofenloch is relevant because it is directed to an electrolytic apparatus for the electrolysis of water. Ofenloch teaches two ways of increasing the rate of production of gases in an electrolytic cell one being allowing the ions to move more freely in solution (col. 1, lines 37-41). Ofenloch says one way to increase the movement of ions is to introduce an oscillating magnetic field (col. 1 lines 42-46). It is then noted one way to take advantage of this is to arrange the electrodes perpendicular to the magnetic field (col. 1 lines 60-64; note figure 1 for the arrangement of the electrodes). This arrangement is essentially arc-like with electrodes surrounding a center point and going around 360 degrees.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ an electrode design similar to Offenloch to the electrolytic cell of McCallum in order to take advantage of increased production rate of gases (in the case of McCallum: chlorine, which immediately dissolves in the water to form hypochlorite).

Response to Arguments

14. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw